

Robert C. Lothrop
By and through the
Bureau of Indian Affairs
c/o CRITFC
729 N.E. Oregon, Suite 200
Portland, Oregon 97232-2107

November 16, 2006

Robert Clapp
Protected Resources Division
National Marine Fisheries Service
525 NE Oregon Street, Suite 500
Portland, OR. 97232-2737
FAX (503) 230-5435

RE: Application for New Section 10 Permit

Dear Mr. Clapp

Enclosed is an application for a new Section 10 Permit for scientific purposes to sample adult steelhead as well as chinook, coho, and sockeye salmon at Bonneville Dam as well as to tag juvenile fall chinook at the Hanford Reach. This application covers the adult fish sampling and Hanford Reach sampling portions of existing Section 10 Permit 1379 which expires December 31, 2007. Recently, we have received funding to PIT tag adult salmon at Bonneville Dam, and expect that our PIT tagging activities will expand. Therefore, we are adding tagging as a permitted activity for all species sampled at Bonneville Dam. We are also seeking to add adult steelhead sampling at Bonneville Dam to our permit, rather than having it covered by a separate permit than our other adult sampling. Finally, we have increased our allowable take for the Hanford project as it appears likely that a new project will be funded that likely will increase our bycatch of ESA-listed spring Chinook salmon.

Please do not hesitate to contact me, or the relevant project leaders, if you require additional information or have any questions.

Sincerely,

Robert C. Lothrop
Manager, Public Policy and Litigation
Support Department

A. Title:

Application for a Permit for Scientific Purposes under the Endangered Species Act of 1973.

This new Section 10 Permit application addresses ongoing fisheries research projects previously covered under Section 10 Permit 1379. The projects will be under the direction of researchers from the Columbia River Inter-Tribal Fish Commission's Fish Science department. The three projects addressed in this application are:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

This project is a Pacific Salmon Committee Chinook Technical Committee funded project.

Project 2. Adult steelhead, chinook, sockeye, and coho salmon sampling at Bonneville Dam.

The chinook, sockeye, and coho sampling part of the project is funded by the Pacific Salmon Committee Chinook Technical Committee, while the steelhead sampling is funded by the NOAA. .

Project 3. Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

This project is a Pacific Salmon Committee Chinook Technical Committee funded project.

B. Species: Snake River spring/summer and fall chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*Oncorhynchus mykiss*), Upper Columbia spring chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*Oncorhynchus mykiss*), Snake River sockeye salmon (*Oncorhynchus nerka*) and lower Columbia River fall chinook and salmon (*Oncorhynchus keta*) and steelhead (*Oncorhynchus mykiss*).

C. Date: October 4, 2006.

D. Applicant:

Mr. Robert C. Lothrop, Manager of Policy Development and Litigation Support
Department
Columbia River Inter-Tribal Fish Commission
729 N.E. Oregon Street, Suite 200
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Technical Contact:

Jeffrey K. Fryer, Fisheries Scientist
Columbia River Inter-Tribal Fish Commission
729 NE Oregon Street

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Telephone Number - (503) 731-1266

This application is made by and through the Bureau of Indian Affairs pursuant to P.L. 93-638. This application does not constitute an admission that the Endangered Species Act applies to the activities of the Indian tribe identified in this application.

E. Information on Personnel, Cooperators, and Sponsors:

1. Principal Investigators and Field Supervisors

Jeffrey Fryer received a PhD degree in Fisheries from the University of Washington in 1995. Dr. Fryer has 20 years experience with the Columbia River Inter-Tribal Fish Commission's Fish Science department.

John Whiteaker received a BSc degree in Fisheries from Oregon State University in 1995. Mr. Whiteaker has 7 years experience as a Fishery Biologist with the Columbia River Inter-Tribal Fish Commission's Fish Science department..

2. Field Personnel:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

- Jeffrey Fryer, Principal Investigator
- John Whiteaker, Field Supervisor
- Bobby Begay, Field Supervisor
- Additional technicians hired as needed

Project 2: Adult steelhead, chinook, sockeye, and coho salmon sampling at Bonneville Dam.

- Jeffrey Fryer, Principle Investigator
- John Whiteaker, Field Supervisor
- Bobby Begay, Field Supervisor
- Additional technicians hired as needed

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

- Jeffrey Fryer, Principal Investigator
- Keely Murdoch, Field Supervisor
- Christa Strickwerda, Field Supervisor
- Additional technicians hired as needed

3. Sponsors

Projects 1, 2, and 3:

Dave Cantillon
U.S. Section of the Pacific Salmon Commission, Coordinator's Office
7600 Sand Point Way N.E.
Seattle, WA. 98115
(206) 526-4140

Project 2-steelhead sampling
Peter Dygart,
NOAA Fisheries
Sustainable Fisheries Division
7600 Sand Point Way NE Bin C15700
Seattle, WA 98115-6349
Phone: 206 526-6734
Email: peter.dygart@mercury.akctr.noaa.gov

Cooperators

U.S. Army Corps of Engineers
Washington Department of Fish and Wildlife
University of Idaho

4. Contractor:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

Yakama Nation, Toppenish, WA
Washington Department of Fish and Wildlife, Olympia, WA
Confederated Tribes of the Umatilla Indian Reservation, Pendleton, WA

Project 2 Adult steelhead, chinook, sockeye, and coho salmon sampling at Bonneville Dam

N/A

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

Yakama Nation, Toppenish, WA

5. Disposition of Tissue Samples, Dead Specimens, etc.:

Any mortalities will be measured, examined and returned to the river or stream of capture.

6. Transport and Long Term Holding:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

N/A

Project 2: Adult steelhead, chinook, sockeye, and coho salmon sampling at Bonneville Dam N/A

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

F. Project Description, Purpose, and Significance:

1. Justification of the Objectives:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

The purpose of this research is to estimate exploitation rates and fishery interception rates for Hanford Reach fall Chinook salmon. Columbia Basin upriver bright fall chinook salmon are the most heavily harvested Columbia Basin salmon stock, contributing to Alaskan, Canadian, coastal, and river fisheries. The largest component of this run is the naturally spawning Hanford reach stock. This stock has been chosen by the Pacific Salmon Commission as an indicator stock. Therefore, since 1987, the Pacific Salmon Commission has supported this project to capture and coded wire tag 200,000 juvenile fall chinook salmon. This project provides a crucial component to enhancing our ability to accurately estimate catches of the Hanford fall chinook stock by domestic and foreign fisheries. Knowledge from these studies will play a significant role in developing abundance based management of Pacific Salmon. Depending on the availability of funds, we have also inserted passive integrated transponder (PIT) tags in juvenile fall Chinook. (In 2007, it is looking increasingly likely that we will receive funding for a project we proposed as part of the 2007-2009 CBFWA program to PIT tag 20,000 juvenile fall Chinook.) Data from subsequent detections of these fish is used to estimate downstream survival, smolt to adult survival rates, and upstream survival and distribution. While capturing juvenile fall chinook salmon, other species, including juvenile ESA-listed spring chinook salmon and steelhead, are subject to capture.

Project 2: Adult steelhead, chinook, sockeye, and coho salmon sampling at Bonneville Dam

The purpose of this project is to determine the age and length-at-age composition of salmonids passing Bonneville Dam. These estimates are used in run reconstruction and run predictions.

Since 1985, one focus of research has examined the use of scale pattern analysis to identify stocks of Columbia Basin sockeye salmon. Scale samples collected in Bonneville Dam as well as terminal areas (Wells or Tumwater dams or

spawning grounds) have been used to determine the age composition as well as in stock identification experiments to classify the mixed stock sample by stock. Spring chinook salmon have been sampled since 1985, summer chinook since 1991, fall chinook since 1997, and steelhead since 2004. (Steelhead were sampled by ODFW prior to 2004.)

This project has also spawned ancillary studies such as examining changing rates of marine mammals damage on salmonids sampled at Bonneville Dam.

In 2006, the Pacific Salmon Commission provided funding to insert passive integrated transponder (PIT) tags in adult spring, summer, and fall Chinook as well as sockeye salmon to learn more about migratory timing at Bonneville Dam as well as upstream survival and age and length-at-age distribution. We expect PIT tagging of adult salmonids to continue and expand at Bonneville Dam.

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

The purpose of this project is to determine the age and length-at-age composition of sockeye salmon passing Tumwater Dam, as well as to provide known-stock scale samples for the sockeye stock identification portion of Project 2. Age composition estimates from have been used in run reconstruction and run predictions.

2. Recommendation or Requirement of a Federal Agency:

All three projects are required, and funded, by the Pacific Salmon Commission for implementation of the Pacific Salmon Treaty.

Contact:

Dave Cantillon

U.S. Section of the Pacific Salmon Commission, Coordinator's Office

7600 Sand Point Way N.E.

Seattle, WA. 98115

(206) 526-4140

Data for project 2 are required by the U.S. v. Oregon Technical Advisory Committee.

Contact

Stuart Ellis, chair

U.S. vs. Oregon Technical Advisory Committee

Columbia River Inter-Tribal Fish Commission

729 NE Oregon Street

Portland, OR 97232

3. Broader Significance:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

Data from this tagging program is used by the Pacific Salmon Commission in setting fisheries.

Project 2: Adult steelhead, chinook, sockeye, and coho salmon sampling at Bonneville Dam

Age composition estimates obtained by this project are used by the U.S. v. Oregon Technical Advisory Committee to predict run sizes and manage fisheries.

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

Age composition estimates obtained by this project are used by the U.S. v. Oregon Technical Advisory Committee to predict run sizes and manage fisheries.

4. Relationships to Other Ongoing or Proposed Projects or Programs:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

Chinook tagged by this project are collected and tags analyzed by fishery sampling programs in Oregon, Washington, British Columbia, and Alaska. Chinook salmon are also collected by spawning ground surveys and at Priest Rapids Hatchery. A comparison group of 200,000 juvenile upriver bright fall Chinook salmon is tagged annually at Priest Rapids hatchery.

Project 2: Adult steelhead, chinook, sockeye, and coho salmon sampling at Bonneville Dam

Age composition estimates obtained by this project are used by the U.S. v. Oregon Technical Advisory Committee to predict run sizes and manage fisheries.

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

Age composition estimates obtained by this project are used by the U.S. v. Oregon Technical Advisory Committee to predict run sizes and manage fisheries.

5: Justification for Using Listed Species and a Discussion of Possible Alternatives:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

This project does not target listed species.

Project 2: Adult steelhead, chinook, sockeye, and coho salmon sampling at Bonneville Dam

There is no method to selectively avoid sampling ESA-listed fish, and ESA-listed fish are an important part of the run that our sampling is representing.

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

This project does not target listed species.

G. Project Methodology:

1. Proposed Duration of the Project or Program, Including Start and End Dates:

Project 1: : Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

This project started in 1987 and is expected to continue annually for as long as the data is needed by the Pacific Salmon Commission for setting ocean harvest rates and run reconstruction. The dates this project runs vary annually depending on fish maturation rates as well as logistical concerns. Typically the project runs for approximately two weeks sometime between May 10 and June 15.

Project 2: Adult steelhead, chinook, sockeye, and coho salmon sampling at Bonneville Dam.

This project started in 1987 for spring chinook and sockeye salmon, 1991 for summer chinook salmon, and 1997 for fall chinook salmon and coho salmon, and 2004 for steelhead and is expected to continue annually for as long as the data is used by the Pacific Salmon Commission and the U.S. vs. Oregon Technical Advisory Committee for setting harvest rates, predicting run sizes, and run reconstruction. Chinook salmon and steelhead are sampled from approximately April 1 through October 31, with other species sampled whenever they appear at Bonneville Dam.

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

This project started in 1987 and has continued annually, except for those years when sockeye abundance was so low as to make sampling difficult. It is expected to continue annually for as long as the data is used by the Pacific Salmon Commission and the U.S. vs. Oregon Technical Advisory Committee for predicting run sizes and run reconstruction. The dates that sampling occurs vary annually depending on sockeye salmon run timing at Tumwater Dam.

Typically, sampling occurs over three weeks between approximately July 10 and August 15.

2. Procedures and Techniques:

Project 1: : Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

Collection of Pre-Smolt Salmon

Three crews of 3 to 4 persons working out of three 5.8 to 6.4 m jet sleds will collect pre-smolt salmon. Capture crews are personnel from the Confederated Tribes and Bands of the Yakima Nation, the Confederated Tribes of the Umatilla Indian Reservation, and the Columbia River Inter-Tribal Fish Commission. Fish will generally be collected between White Bluffs and the Vernita Bridge, although fish may be captured as far downstream as Richland.

Fish are captured using both stick seines and beach seines, but in general, stick seines are used to reduce mortality. Stick seines 11.0 m in length by 1.8 m deep with a mesh size of 4.8 mm are used in sections of the river with moderate velocity and 0.3 to 1.4 m of depth. The capture technique is to parallel the river bank, with two people working the net and a third person walking through the shallow water adjacent to the net sweep but ahead of the net in an effort to scare juveniles out of the grassy river bank area and into the net's path. The net is moved with the current for distances of 50 to 100 m before being pursed. Shorter sets are made when large numbers of juveniles are encountered or to avoid obstacles.

Beach seines 36.6 m long and 3.0 m deep with a mesh size of 4.8 mm may also be used. One end is attached to the bow of the boat while one or two persons walking through water approximately one meter deep handle the other end. The net is moved with the current for 50 to 200 m before being pursed. Beach seines were rarely used in 2001.

The captured juvenile chinook are temporarily placed into five gallon plastic buckets and transferred to holding tanks with oxygen aerating systems. When crews have a full load of fish (approximately 5,000 fish per holding tank) or when fish had been in the tank for more than 3-4 hours, they are transported to the tagging area and transferred into three troughs 0.9m x 0.9m x 4.8m located on shore near the tagging trailer. A generator and pump will be used for the water supply for these troughs. A minimum of one person will be on-site at all times that fish are in the troughs for monitoring.

Tagging Procedures

Fish are coded-wire tagged and adipose-fin clipped in a tagging trailer operated by the Yakama Nation. A tagging trailer crew typically consists of six markers, four taggers, and one tagging supervisor. To provide water for the trailer, a diesel generator is used to power a screened pump that is put in the river.

Fish are netted from the holding tanks and carried into the tagging trailer. The fish are then anesthetized in a solution of MS-222. Under-sized chinook salmon (< 50 mm), injured chinook, and over-sized chinook (>80 mm) are counted and culled. To reduce the possibility of tagging a summer or spring chinook smolt, the over-sized chinook are not marked and tagged. The culled fish are piped into a 0.9 by 0.6 by 3.6 m trough outside the trailer.

Chinook 47 to 80 mm will be marked by removing the adipose fin. Marked fish are separated into two size groups, and an appropriate head mold is used on the tagging machine for each group. The chinook are implanted with full-length coded-wire tags.

After tagging, fish are then piped into a second 0.9m by 0.6m by 3.6 m trough to recover. Both troughs are constantly supplied with fresh water. Samples of both culled and tagged fish are measured for fork length.

Tagged fish are examined for immediate tag retention. Fish are then released downstream of fish collection areas to minimize recaptures. A sample of about 200 fish per day are held for 24 hours to measure tag retention and delayed mortality. A sample of approximately 100 fish per day are held for the period of the project to measure long term tag retention.

After recovery, all fish are released through a 10 cm pipe back to the river.

The dates this project runs vary annually depending on fish maturation rates as well as logistical concerns. Typically the project runs for approximately two weeks sometime between May 10 and June 15.

Project 2: Adult steelhead, chinook, sockeye, and coho salmon sampling at Bonneville Dam

Spring, summer, and fall chinook, along with sockeye and coho salmon and steelhead are sampled at the Bonneville Dam Adult Fisheries Facility (AFF). This facility is owned and operated by the U.S. Army Corps of Engineers and is located on the north side of Bonneville Dam. The fish that swim up the north entrance of the Washington shore fish ladder are, when the trap is in operation, diverted into a large pool. (If fish are uniformly distributed across the fish ladders, the AFF could potentially sample 25% of the salmonid population crossing Bonneville Dam.) From here, they swim through a false weir and slide down a flume. The operator diverts non-target species back into the fish ladder. Target species are sent into a sampling tank that contains a weak solution of clove oil (eugenol). Fish are typically anesthetized in 3-5 minutes. After the

fish are anesthetized, they are measured and examined for fin clips, freeze brand marks, wounds and scares. Four to six scales are removed per fish. If required, the fish are also PIT tagged and a caudle punch collected for genetic analysis. The fish remain in the water at all times except when being measured for length which is done using a ruler attached to the top edge of the tank. The total time required to sample a fish is approximately one minute. The fish are then placed in the recovery pool and are allowed to volitionally return to the fishway.

Sampling is done in conjunction with various other programs that may use the adult trap. Spring chinook salmon are sampled from March 1 to June 15, summer chinook from June 16 to July 31, and fall chinook salmon from August 1 to October 31. Sockeye salmon are sampled from approximately June 1 to July 31 each year, while coho salmon are sampled from approximately August 1 to October 31 each year. Steelhead are sampled from March 1 through October 31. Sampling is typically conducted for 6 hours per day, one to three days per week. Desired sample sizes are approximately 750 fish for each of the three chinook stocks, 750 sockeye salmon, 400 coho salmon, and 2% of the run for steelhead.

Take estimates for ESA-listed UCR spring Chinook, SR spring/summer Chinook, SR fall Chinook, SR sockeye, LCR coho, and LCR chinook are the same as those in Permit 1379.

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

Tumwater Dam is owned by Chelan PUD. When the trap is in operation, all fish ascending the fish ladder are diverted to a false weir and slide down a flume into a large tank. It is often possible to divert non-target species directly back into the river prior to entering the tank. Sockeye salmon are anesthetized using a weak solution of clove oil (eugenol) or MS-222. Fish are typically anesthetized in 3-5 minutes. After the fish are anesthetized, they are measured and examined for fin clips, freeze brand marks, wounds and scares. Four scales are removed per fish. The total time required to sample a fish is approximately one minute. The fish are then placed in the recovery tank and, upon recovery, returned directly into the headpond behind Tumwater Dam. Any non-target species (steelhead and summer chinook) that happen to end up in the anesthetic tank are allowed to recover and released.

The estimated take is that allowed under permit 1379. In recent years, we have been working in conjunction with Washington Department of Fish and Wildlife and all steelhead take has been on their permit. However, we would like to continue to include steelhead take on our permit in case WDFW trap use changes and we have to operate the trap ourselves.

3. Discussion of possible alternatives

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

We have experimented with using traps to capture juvenile fall Chinook salmon. However, we can trap fish in nowhere near the numbers necessary for this project. The primary way we can decrease the bycatch of endangered juvenile spring Chinook salmon is by fishing in areas with less current. However, in some years this is not possible due to low juvenile fall Chinook abundance, the smaller size of the fish captured being below minimum taggable size, and the large numbers of other species; e.g. shiners, bass, suckers, that we may capture. If we are PIT tagging juvenile fall Chinook salmon, we also need to capture larger juvenile fall Chinook as the minimum fork length for the PIT tags we will use will be 60 mm.

The abundance of ESA-listed subyearling juvenile steelhead is so low that there is no way to modify our methods to avoid them.

Project 2: Adult steelhead, chinook, sockeye, and coho salmon sampling at Bonneville Dam

No alternative exists to sampling adult salmonids at Bonneville Dam to get the data we need.

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

Spawned out sockeye salmon could be used from the spawning grounds or the hatchery. However, scale quality is much poorer for age estimation and scale pattern analysis studies.

4. Potential for Injury or Mortality and Steps Taken to Minimize Adverse Effects:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

Considerable effort is made by capture crews and tagging crews to identify and remove non-target species, including juvenile spring chinook and steelhead upon capture, as they are transferred to the holding tanks, and as they are moved to the tagging trailer. The larger size of juvenile spring chinook and yearling steelhead makes them relatively easy to spot and remove. In recent years, we have been using fish sorters in the field when the catch includes larger fish that are typically spring chinook and northern pike-minnow. It is then very easy to release these fish. We have no way of sorting newly emergent juvenile steelhead. These fish, along with any remaining spring chinook or yearling steelhead, are detected by technicians in the fish tagging trailer and released.

Project 2: Adult steelhead, chinook, sockeye, and coho salmon sampling at Bonneville Dam

There is no method to selectively avoid sampling ESA-listed fish, and ESA-listed fish are an important part of the run that our sampling is representing. Steps are taken to minimize the effect of sampling all fish. At Bonneville Dam, fish are diverted into an anesthetic tank. There, they are anesthetized, quickly

PIT tagged, sampled for scales and genetics, measured for length, and biological characteristics noted. The fish are placed into a recovery tank containing freshwater, and allowed to recover prior to release. To minimize impacts on fish, sampling is reduced when water temperatures exceed 70F. To minimize the number of fish impacted by sampling programs at the Bonneville Adult Fish Facility, we work closely with other parties sampling at the FERL. Where possible, we work with the same fish, or sample at the same time, allowing fish to bypass the trap at other times.

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

At the Tumwater trap, we minimize the number of fish impacted by sampling programs by working with other parties (principally WDFW). Over the past several years, all incidental take of ESA-listed fish has been the responsibility of WDFW.

We take steps to minimize the effect of sampling all fish. Fish are diverted into an anesthetic tank, anesthetized, quickly sampled for scales, measured for length, and biological characteristics noted. The fish are placed into a recovery tank containing freshwater, and allowed to recover prior to release.

H. Description and Estimates of Take:

1. Description of Recent Status and Trends of Each Species:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

Hanford Reach upriver bright fall chinook are the healthiest stock of salmonids left in the Columbia Basin. Hanford Reach fall chinook are described as stable.

Upper Columbia River wild spring chinook salmon and upper Columbia River steelhead are both listed as endangered under the ESA

Project 2: Adult steelhead chinook, sockeye, and coho salmon sampling at Bonneville Dam

Salmon sampled at Bonneville Dam are from a mix of stocks. Snake River fall chinook, Snake River spring/summer, lower Columbia River chinook salmon, upper Columbia spring chinook salmon, Upper Columbia River steelhead, Middle Columbia River steelhead, and Lower Columbia River steelhead, and Lower Columbia River coho are all listed under the ESA as threatened. Snake River spring/summer Chinook and Snake River sockeye salmon are listed as endangered. Upper Columbia summer/fall chinook salmon, Deschutes Summer/fall, mid-Columbia River spring, and Okanogan and Wenatchee sockeye salmon are not warranted for listing.

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

Wenatchee sockeye salmon and incidentally caught upper Columbia summer/fall chinook salmon are not listed under the ESA. Upper Columbia steelhead are listed under the ESA as threatened.

2. Justification for all potential mortalities by take category.

Given the quantity of fish we are sampling, we estimate a minimal level of mortality. Although we do trap ESA-listed fish, we very rarely have ESA-listed mortalities for any of our projects. While we have, on occasion, exceeded our take estimate, we have never exceeded our mortality estimate for these projects.

3. Details on take estimates:

Actual take for project 1 is dependent on numerous factors over which we have little control. These factors include the abundance of ESA listed fish in the area as well as the abundance, distribution, and size of target juvenile fall Chinook salmon. Actual take is estimated by counting up all potential ESA listed fish and using the annual memo NOAA prepares (e.g. August 14, 2005 memo from John W. Ferguson to Laurie Allen) giving the proportion of juvenile fish at mainstem dams to estimate the percentage that are ESA listed.

For project 2, post season take is estimated using the equation,

$$E = S * \frac{C}{B}$$

for each listed stock, where S is our total sample size, B is the total population of that stock estimated at Bonneville Dam, and C is the estimated number of the listed stock at Bonneville Dam (based on TAC estimates). Take cannot be estimated until well after the run passes, so take estimates in this permit application are based on those that have been sufficient in previous years.

Steelhead estimates are based on a U.S. vs. Oregon Technical Advisory Committee (TAC) goal of 2% of the run being sampled. (In recent years, due to funding limitations, sample sizes have rarely exceeded 0.5%.) Natural origin fish are then apportioned according to estimates derived by TAC in 2003 where A run wild steelhead at Bonneville Dam were estimated to consist of 2.8% Lower Columbia River, 46.5% Mid-Columbia River, 46.8% Snake River, and 3.9% Upper Columbia River steelhead. B-run wild steelhead are all assumed to be from the Snake River. Given these assumptions, TAC data was used to estimate the what the ESU take would have been for the 1984-2004 runs, and the maximum take listed in Table 2.

4. USFWS listed species

No USFWS listed species are anticipated to be affected by our projects.

Table 1. Estimated number of juvenile Upper Columbia spring/summer chinook and Upper Columbia steelhead to be incidentally collected using seines and estimated mortality due to capture and release.

Number of Individuals (Totals in Bold)	Species and/or population and/or ESU/DPS	Life Stage	Sex	Origin	Take Activity Category	Mortality Estimate	Location	Date(s)	Details
200	Upper Columbia Spring Chinook Salmon	Juvenile	N/A	Natural	Capture/Release	4	Hanford Reach	May 1- June 15	Beach and stick seine
200	Upper Columbia Spring chinook salmon	Juvenile	N/A	Hatchery	Capture/Release	4	Hanford Reach	May 1- June 15	Beach and stick seine
30	Upper Columbia River steelhead	Juvenile	N/A	Natural	Capture/Release	1	Hanford Reach	May 1- June 15	Beach and stick seine
20	Upper Columbia River steelhead	Juvenile	N/A	Hatchery	Capture/Release	1	Hanford Reach	May 1- June 15	Beach and stick seine
450						10			

Table 2. Estimated number of ESA-listed Chinook and sockeye salmon and steelhead sampled under project 2 and estimated mortality due to sampling.

Number of Individuals (Totals in Bold)	Species and/or population and/or ESU/DPS	Life Stage	Sex	Origin	Take Activity Category	Mortality Estimate	Location	Date(s)	Details
107	Upper Columbia Spring Chinook Salmon	Adult	N/A	Natural	Trap/Sample/Tag/Release	1	Bonneville Dam	March 1- May 31	
251	Snake River Spring/Summer Chinook salmon	Adults	N/A	Natural	Trap/Sample/Tag/Release	1	Bonneville Dam	March 1- July 31	
50	Snake River Fall Chinook salmon	Adults	N/A	Natural	Trap/Sample/Tag/Release	1	Bonneville Dam	August 1- October 31	
3	Snake River sockeye	Adults	N/A	Natural/Hatchery	Trap/Sample/Tag/Release	0	Bonneville Dam	May 15- August 15	
107	Upper Columbia River Steelhead	Adults	N/A	Natural/Hatchery	Trap/Sample/Tag/Release	1	Bonneville Dam	March 1- October 31	
1525	Snake River Steelhead	Adults	N/A	Natural/Hatchery	Trap/Sample/Tag/Release	2	Bonneville Dam	March 1- October 31	
1277	Mid Columbia River steelhead	Adults	N/A	Natural/Hatchery	Trap/Sample/Tag/Release	2	Bonneville Dam	March 1- October 31	

Number of Individuals (Totals in Bold)	Species and/or population and/or ESU/DPS	Life Stage	Sex	Origin	Take Activity Category	Mortality Estimate	Location	Date(s)	Details
77	Lower Columbia River Steelhead	Adult	N/A	Natural/Hatchery	Trap/Sample/Tag?Release	1	Bonneville Dam	March 1-October 31	
50	Lower Columbia River Coho	Adults	N/A	Natural/Hatchery	Trap/Sample/Tag/Release	0	Bonneville Dam	August 1-October 31	
50	Lower Columbia River chinook	Adults	N/A	Natural/Hatchery	Trap/Sample/Tag/Release	0	Bonneville Dam	August 1-October 31	
3497						9			

Table 3. Estimated number of Upper Columbia steelhead incidentally sampled under project 3 and estimated mortality due to sampling.

Number of Individuals (Totals in Bold)	Species and/or population and/or ESU/DPS	Life Stage	Sex	Origin	Take Activity Category	Mortality Estimate	Location	Date(s)	Details
20	Upper Columbia Steelhead	Adult	N/A	Natural	Trap/Release	0	Tumwater Dam, Wenatchee River	July 1-August 15	

I. Transportation and Holding:

1. Transportation of Listed Species:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

N/A

Project 2: Adult chinook, sockeye, and coho salmon sampling at Bonneville Dam

N/A

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

N/A

2. Holding of Listed Species:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

N/A

Project 2: Adult chinook, sockeye, and coho salmon sampling at Bonneville Dam

N/A

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

N/A

3. Emergency Contingencies:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

N/A

Project 2: Adult chinook, sockeye, and coho salmon sampling at Bonneville Dam

N/A

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

N/A

J Cooperative Breeding Program:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

We are willing to participate in a cooperative breeding program and to maintain or contribute data to a breeding program, if such action is requested.

Project 2: Adult chinook, sockeye, and coho salmon sampling at Bonneville Dam

We are willing to participate in a cooperative breeding program and to maintain or contribute data to a breeding program, if such action is requested.

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

We are willing to participate in a cooperative breeding program and to maintain or contribute data to a breeding program, if such action is requested.

K. Previous or Concurrent Activities Involving Listed Species:

1. Previous Permits:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

Permits 825, 1134, and 1379

Project 2: Adult chinook, sockeye, and coho salmon sampling at Bonneville Dam

Permits 825, 1134, and 1379

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

Permits 825, 1134, and 1379

2. Mortalities of Listed Species for the Last Five Years:

Project 1: Juvenile upriver bright fall chinook salmon tagging at Hanford Reach.

One juvenile non-adipose clipped spring chinook salmon on May 29, 2002. This fish is likely from the Upper Columbia Spring Chinook ESU.

Project 2: Adult chinook, sockeye, and coho salmon sampling at Bonneville Dam

One fish on August 31, 2001, likely a tule. It is very unlikely that this fish was an ESA listed fish. June 14, 2006 chinook salmon. Based on it's age of 0.4, this was very likely a non-listed mid-Columbia summer Chinook, and not an ESA-listed fish.

Project 3: Adult sockeye salmon sampling at Tumwater Dam, Wenatchee River.

None.

L. Certification:

"I hereby certify that the foregoing information is complete, true and correct to the best of my knowledge and belief. I understand that this information is submitted for the purpose of obtaining a permit under the Endangered Species Act of 1973 (6 U.S.C. 1531 et seq.) and regulations promulgated thereunder, and that false statement may subject me to the criminal penalties of 18 U.S.C. 1001, or to penalties under the Endangered Species Act of 1973".

Mr. Robert C. Lothrop

By and through the Bureau of Indian Affairs

c/o Columbia River Inter-Tribal Fish Commission

729 N.E. Oregon Street, Suite 200
Portland, OR 97232

Robert C. Lothrop Date

RESUMES OF KEY PERSONNEL

JEFFREY K. FRYER, Ph.D.

Columbia River Inter-Tribal Fish Commission
729 NE Oregon Street
Portland, Oregon 97232
(503) 731-1266
fryj@critfc.org

Education

- 1995 University of Washington Ph.D. (Fisheries). Dissertation title: Columbia Basin sockeye salmon-causes of their past decline, factors contributing to their present low abundance, and the future outlook.
- 1985 University of New Brunswick at Fredericton, New Brunswick, Canada. M.Sc. (Computer Science)
- 1979 University of New Brunswick at Fredericton. B.Sc.(Computer Science) with the equivalent of an honors in Statistics and a minor in Economics

Appointments

- October 1989 to present: Fisheries scientist and project leader at the Columbia River Inter-Tribal Fish Commission. Duties have included the supervision of sockeye and chinook salmon stock identification projects. The stock identification project has required designing and implementing stock identification experiments, field sampling, reading scales for age, measuring scale circuli, creating computer programs, spreadsheets, and databases to manage and analyze data, making presentations at technical and professional meetings, and publishing technical reports and journal articles.
- June 1987 to September 1989: Graduate research assistant at University of Washington.
- September 1985 to June 1987: Teaching assistant at the University of Washington.

Selected Publications

- Fryer, J.K. 1998. Frequency of pinniped-caused scars and wounds on adult spring-summer chinook and sockeye salmon returning to the Columbia River. *North American Journal of Fisheries Management*. 18: 46-51.
- Fryer, J.K.. 2006. Identification of Columbia Basin sockeye salmon stocks in 2005. Columbia River Inter-Tribal Fish Commission Technical Report 06-2. Portland.
- Hatch, D.R., J.K. Fryer, M. Schwartzberg, D.R. Pederson, and A. Wand. 1998. A computerized editing system for video monitoring of fish passage. *North American Journal of Fisheries Management*. 18: 694-199.
- J. Whiteaker, J.K. Fryer, and J. Doyle. 2006. Age and length composition of Columbia Basin chinook, sockeye, and coho salmon at Bonneville Dam in 2005. Columbia River Inter-Tribal Fish Commission Technical Report. Portland.
- Schwartzberg, M. and J.K. Fryer. 1993. Identification of hatchery and naturally spawning Columbia Basin spring chinook salmon using scale pattern analyses. *North American Journal of Fish Management*. 13: 263-261

JOHN M. WHITEAKER

Fishery Biologist
Columbia River Inter-Tribal Fish Commission
729 NE Oregon St, Suite 200
Portland, OR. 97232

Education

Bachelor of Science, Zoology

Oregon State University, Corvallis, Oregon
Degree received June 1995

Research Experience

Fisheries Biologist, Columbia River Inter-tribal Fish Commission, Portland, Oregon. April 1999-present.

Assist researchers on several projects related to anadromous fish production and passage within the Columbia River Basin. Specific studies include: monitoring adult salmon passage over Bonneville dam, and CWT tagging juvenile fall Chinook salmon in the Hanford reach. Specific duties include: Supervise field crews for fish capture and assessment, coded wire tagging, PIT tagging, collecting and cataloging specimens/tissue samples for genetics, and radio and acoustic tracking fish by boat and plane. Other duties include collect and compile data from several state and federal agencies, the use of computers and related software for word processing and for data entry, data management and analysis, the use of pertinent sampling and testing equipment in the field and in the lab, and assist in developing and submitting proposals, reports and technical reviews.

Fish and Wildlife Biologist, Biological Resource Division (USGS), Reno Field Station, Nevada. June 1995-Oct. 1998. Assist in determining the status of the endangered Lost River and Shortnose suckers within the Klamath basin of Southern Oregon and Northern California using an ecosystem approach. Population dynamics, food habits, general distribution, reproduction, age structure, life history and water quality were considered. Specific duties include: fish capture and assessment, PIT tagging, dissection for removal of physiological and genetic samples, radio telemetry, fish kill investigation, stream surveys, spawning substrate analysis, aging using opercles and otoliths, computer software for data entry and analysis, and the use of pertinent sampling and testing equipment in the field and in the lab. Other duties, as crew leader, were to assist in the planning, implementation and management of research projects within the Klamath Duty Station. Coordinate efforts with federal and state agencies, private consultants, and the Klamath Tribes. I have also assisted in writing reports and technical protocols.

Related Expertise

Assist in coordinating and conducting field research; which includes supervising field crews for, and participate in, fish capture and assessment, PIT tagging, data management and analysis, and report writing.

Keely G. Murdoch
3521 Hansel Lane
Peshastin, Washington
(509) 548-3029

Education: M.Sc. Biology, August 1996

Central Washington University, Ellensburg, Washington

Thesis: Food Habits and Habitat of Juvenile Chiselmouth (*Acrocheilus alutaceus*) in the Yakima River, Washington

Awarded Graduate Teaching Assistantship.

Coursework included Fisheries Management, advanced statistical analysis, research and study design, and molecular biology.

B.S. Biology, June 1994

Western Washington University, Bellingham, Washington

Coursework included fisheries biology, ichthyology, physiological ecology, and bio-statistical analysis.

Professional Experience:

**Feb 2000-
Present**

Fisheries Biologist

***Yakama Nation, Fisheries Resource Management
Peshastin, Washington***

Responsible for implementing the mid-Columbia coho reintroduction feasibility study monitoring and evaluation plan. Design and implement biological studies to assess ecological interactions between coho salmon, spring chinook, summer steelhead, and sockeye salmon. Studies include use of radio-telemetry to identify stray and drop-out rates of reintroduced coho salmon, redd surveys, hydro-acoustic surveys, direct predation evaluations, and micro-habitat use and competition evaluations. Techniques used include smolt-trap operation, underwater observation, electro-fishing, and tow-netting. Coordinate research activities with the USFWS, USFS, WDFW, CCPUD, DCPUD, GCPUD, private landowners and consultants. Contribute to the design, construction and implementation of coho acclimation sites in the Wenatchee River Basin. Designed and implemented adult coho trapping program. Responsible for spawning up to 1400 coho salmon and early egg incubation. Participate in technical work group meetings. Prepare annual reports and presentations. Supervise five biologists and up to nine fisheries technicians.

**Mar 1997-
Dec 1999**

Fisheries Biologist

***Chelan County Public Utility District
Wenatchee Washington***

Prepare, plan, and conduct fisheries studies to evaluate a prototype juvenile fish bypass system at Rocky Reach Dam. Coordinate studies with state and federal agencies and consultants. Plan and implement spring and summer chinook spawning ground surveys in the Wenatchee

River basin. Analyze data and prepare written reports and verbal presentations. Maintain and instruct personnel in proper use of a digital video system and PTAGIS software. Investigate and monitor gas bubble trauma in juvenile salmonids at Rocky Reach and Rock Island Dams.

**Jan 1999-
Dec 1999**

Instructor - Statistical Analysis
Wenatchee Valley College
Wenatchee Washington.

Instruction of college level course work in statistical analysis. Preparation of course work and tests. Presented lectures and evaluated students on academic performance.

**June 1996-
Mar 1997**

Fisheries Biologist
U.S. Fish and Wildlife Service, Mid-Columbia Fisheries Resource Office, Leavenworth Washington.

Served as Flood Damage Assessment Coordinator. Provided technical assistance to private landowners regarding stream restoration and flood damage prevention. Planned and organized a workshop to assist landowners in stream restoration. Served as a crew leader on stream habitat inventories. Conducted electro-fishing and snorkel surveys for population estimates. Participated in spring and summer chinook salmon spawning surveys on the Entiat River. Participated in bull trout spawning ground surveys in Mill and Panther Creeks (Wenatchee Basin). Assisted in the collection of biological data during spring chinook spawning at the Leavenworth National Fish Hatchery.

**Sept 1994
June 1996**

Biology Teaching Assistant
Central Washington University, Ellensburg WA.

Awarded two year graduate teaching assistantship where I taught laboratory course work in Anatomy and Physiology, Botany, Zoology, Field Research Techniques, and Fundamentals of Biology 101. Responsible for preparing coursework, evaluating students, and assisting the course instructor as needed.

**April 1995-
Aug 1995**

Hydroacoustic Research Technician
Hydroacoustic Technology, Inc., Seattle, Washington

Analysis of hydroacoustic split-beam and single-beam echograms of salmon smolt passage through Wanapum Dam's spillways, sluiceway, turbine intakes, and prototype juvenile bypass system. Maintenance of hydroacoustic equipment and computers. Maintain accurate data and records.

**June 1994-
Sept 1995**

Biological Science Technician (Plants)
Mt. Rainier National Park, U.S. Dept. of the Interior

Served on a meadow restoration crew to implement a restoration plan in the paradise meadows with the goal of restoring all components to "natural conditions" through revegetation and rehabilitation.

Publications

Murdoch, K.G., C.M. Kamphaus, and S. A. Prevatte. 2005. Feasibility and Risks of coho reintroduction in mid-Columbia tributaries: 2003 Annual Monitoring and Evaluation Report. *Prepared for* Bonneville Power Administration, Portland OR.

Murdoch, K.G., C.M. Kamphaus, and S. A. Prevatte. 2004. Feasibility and Risks of coho reintroduction in mid-Columbia tributaries: 2002 Annual Monitoring and Evaluation Report. *Prepared for* Bonneville Power Administration, Portland OR.

Murdoch, K.G. and C.M. Kamphaus. 2004. Mid-Columbia coho reintroduction feasibility project: 2001 annual broodstock development report. *Prepared for:* Bonneville Power Administration, Portland OR. Project Number 1996-040-000.

Murdoch, K.G. and C.M. Kamphaus. 2003. Mid-Columbia coho reintroduction feasibility project: 2001 annual broodstock development report. *Prepared for:* Bonneville Power Administration, Portland OR. Project Number 1996-040-000.

Murdoch, K.G. and M. Larue. 2002. Feasibility and risks of coho reintroduction in mid-Columbia tributaries, 2001 Annual Monitoring and Evaluation Report. *Prepared for* Bonneville Power Administration, Portland OR. Project Number 1996-040-000

Murdoch, K.G., and J. Dunnigan. 2002. Feasibility and risks of coho reintroduction in mid-Columbia tributaries, 2000 Annual Monitoring and Evaluation Report. *Prepared for* Bonneville Power Administration, Portland OR. Project Number 1996-040-000.

Murdoch, K.G. 2001. Mid-Columbia coho reintroduction feasibility project: 2000 acclimation report. *Prepared for:* Bonneville Power Administration, Portland OR. Project Number 1996-040-000

Mosey, T. R., K.G. Murdoch, and B. Bickford. 2000. Biological and hydraulic evaluation of the Rocky Reach Fish Bypass System, 1999. Chelan County Public Utility District, Wenatchee Washington.

Mosey, T. R., and K.G. Murdoch. 2000. Spring and summer chinook spawning ground surveys on the Wenatchee River Basin, 1999. Chelan County Public Utility District, Wenatchee Washington.

Mosey, T.R., K.G. Murdoch, and B. Bickford. 1998. Biological and hydraulic evaluation of the Rocky Reach surface collector, 1998. Chelan County Public Utility District, Wenatchee WA.

Mosey, T.R. and K.G. Murdoch. 1998. Spring and summer chinook spawning ground surveys on the Wenatchee River Basin, 1997. Chelan County Public Utility District, Wenatchee WA.

Titus, K. and McDonald R. 1998. Gas bubble trauma monitoring at Rock Island and Rocky Reach dams. Chelan County Public Utility District, Wenatchee Washington.

Titus, K. 1997. Stream Survey Report, Chumstick Creek, Washington. U.S. Fish and Wildlife Service, Mid-Columbia River Fisheries Resource Office, Leavenworth WA.

Titus, K.G. 1996. Food habits and habitat of juvenile chiselmouth (*Acrocheilus alutaceus*) in the Yakima River, Washington. M.S. Thesis, Central Washington University, Ellensburg, WA.

Professional Societies

Northwest Scientific Association
American Fisheries Society

CHRISTA H. STRICKWERDA

Yakama Nation
Fisheries Resource Management
Mid-Columbia Field Station
7051 Highway 97
Peshastin WA 98847
(509) 548-9413

Education: B.S. Environmental Science, June 2002

Western Washington University, Bellingham, Washington
Coursework included fisheries biology, marine ecology, and cultural anthropology.

Professional Experience:

**April 2005- Present Fisheries Biologist 1
Yakama Nation, Fisheries Resource Management
Peshastin, Washington**

Organize and lead acclimation activities, juvenile population enumeration, spawning ground surveys, smolt trap operation, snorkeling surveys and adult trapping. Responsible for the collection and spawning of 1700 coho salmon and early egg incubation. Analyze data from spawning ground surveys, smolt and fry enumeration, growth, distribution studies, natural smolt production, spawning and egg incubation. Supervise up to 5 fisheries technicians.

**June 2004 - Dec 2004 Scientific Technician 2
Washington Department of Fish and Wildlife
Montesano, Washington**

Sampled catch and collected coded wire tags from the sport and commercial fishery. Collected biological samples for the DNA analysis of salmon. Managed ocean catch summaries to produce weekly quota estimates for each fishery. Conducted river spawning surveys to enumerate salmon returns. Supervise up to 40 scientific technicians.

**Oct 2002 - Oct 2003 Marine Educator/Laboratory Assistant
Padilla Bay National Estuarine Research Reserve
Mt. Vernon, Washington**

Guided preschool - 7th grade exploratory activities teaching estuary biota and environmental impacts. Managed lab and trained volunteers for the Skagit Stream Team, a citizen water quality monitoring program. Produced and authored, "Wetlands are Home: A Guide to Washington's Wetlands Poster".

**July 2003 Presenting Intern
Environmental Learning Institute
Clayoquot Sound, BC Canada**

Delivered a seminar on local marine algae and hosted an intertidal survey and herbarium activity.

June 2002 - Biological Science Technician/ Crew Leader

Aug 2002 Santa Fe National Forest

Pecos, New Mexico

Led a habitat inventory using the Rosgen Geomorphic Stream Classification. Implemented non-invasive snorkeling techniques to monitor the productivity of stream habitat and status of vulnerable *Oncorhynchus clarki virginalis* (Rio Grande Cutthroat Trout). Supervised 4 biological technicians.

July 2001 - Laboratory Technician

Nov 2001 Shannon Point Marine Center, Western Washington University

Anacortes, Washington

Volunteer technician focused on isolating the chemical anti-herbivore compounds in *Ulvaria obscura*.

Professional Societies:

National Audubon Society